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PIPELINE CONSTRUCTION

SOCIALIST COMMITMENTS OF AZERBAIJAN PETROLEUM MACHINEBUILDERS NAMED

Baku VYSHKA in Russian 11 Jan 83 p 1

[Article: "The Policy Is Technical Progress"]

[Text] The socialist commitments of the collective of the Order of the Emblem of Honor Azerbaijan Scientific-Research Institute of Petroleum Machinebuilding (AzINMASh) for 1983.

The collective of the Order of the Emblem of Honor of the Azerbaijan Scientific-Research Institute of Petroleum Machinebuilding, in a setting of high political and labor uplift, inspired by the decisions of the November 1982 CPSU Central Committee Plenum, and guided by the principles and conclusions contained in the speech of CPSU Central Committee General Secretary Yu. V. Andropov at the plenum is proceeding confidently toward the goals planned by the party and the government for the 11th Five-Year Plan.

The AzINMASh collective fulfilled the projects plan, the plan for new equipment and the socialist commitments for the year ahead of time. Technical documentation was worked out for 90 types and sizes of new oilfield equipment.

More than 3,000 tons of metal were saved by improving the design of oilfield equipment manufactured by plants of the subbranch in accordance with the institute's developments.

The number of types and sizes of articles that have been awarded the state Emblem of Quality has been brought up to 326.

In a setting of great creative enthusiasm and filled with pride by the high assessment of the republic's labor achievements--the award to the Azerbaijan SSR of the Red Banner of the CPSU Central Committee, the USSR Council of Ministers, the AUCCTU and the Komsomol Central Committee--the AzINMASh collective is adopting the following socialist commitments:

--complete ahead of time, by 28 April, the plan for scientific research and experimental design with an expected annual economic benefit of about 29 million rubles;

--carry out 20 design developments and extend technical assistance during the manufacture and introduction of no fewer than 35 experimental models and established series of new oilfield equipment, including equipment for work at offshore fields of the VPO [All-Union production association] Kaspmorneftegaz [Caspian Association

for the Offshore Recovery of Oil and Gas], at fields of the PO [production association] Azneft' [State Association of the Azerbaijan Oil Industry], West Siberia, the North, the shelf zones and unique fields of Astrakhan and West Kazakhstan, at superdeep wells, and so on, in accordance with the CPSU Central Committee decree and special-purpose integrated programs of the State Committee for Science and Technology.

Ahead of time:

By the 63d anniversary of the establishment of Soviet power in Azerbaijan and by May Day

--develop working drawings and manufacture gusher fixtures in modular versions for offshore cluster wells and for West Siberia; and

--develop working drawings for modernized hoisting winches for repairing offshore wells.

By the 66th anniversary of the Great October Socialist Revolution

--manufacture for floating drill rigs a test model of a choke in a corrosion-resistant version for an operating pressure of 35 MPa; and

--complete testing of a pumping jack with the footing made of reinforced concrete, and of suspended pipe tongs with remote control.

Develop, in addition to the projects plan:

--working drawings for a small-dimension gusher fixture of the caisson type for a working pressure of 13-21 MPa; and

--a preliminary design for a drive for a deep submerged pump installation for pumping water for popular-consumption needs.

Strengthen work discipline, use work time rationally, and intensify ideological-political and moral indoctrination and the forming by institute workers of a vigorous attitude.

Intensify work on extending sponsorship assistance, and develop and introduce means for mechanizing the Masally Vegetable-Canning Factory.

The institute's collective calls upon the industry's scientific institutes, design offices, and plants to engage actively in the socialist competition for successful fulfillment of socialist commitments and tasks for 1983 and for the five-year plan as a whole.

The socialist commitments were discussed and adopted at a general meeting of the institute's workers.

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OIL AND GAS

URENGOY'S SECOND INTEGRATED GAS-TREATMENT PLANT STARTS UP

Moscow EKONOMICHESKAYA GAZETA in Russian No 46, Nov 82 p 4

[Article by V. Dubrovin (Tyumenskaya Oblast): "A Trillion for Tyumen!"]

[Text] The undulating light of the aurora borealis, as if saluting a holiday, shimmers on the silvery frameworks of the integrated gas-treatment installation. There is a double holiday in Tyumen land: on the eve of the 65th anniversary of the Great October, the trillionth cubic meter of gas has been recovered since start of development of the field.

The departments of UKPG-2 [Integrated Gas-Treatment Installation No 2] at Urengoy were unusually crowded on 3 November. The industry's best workers were at the main components and assemblies, symbolizing the inviolable brotherhood of our motherland's Union republics, krays and oblasts. Oil and gas recovery operators Hero of Socialist Labor S. Tymkiv from the Ukraine and N. Perepechayev from Norilsk and gas-recovery workers of Uzbekistan and Turkmenia, and Yakutia and Azerbaijan controlled the mighty complex, which had been built in the severe Arctic the last 4 years by representatives of our country's various nationalities. Here are the proprietors of the field--gas-recovery operators delegate to the 26th Party Congress R. Khvorostyanov and USSR State Prize winner V. Zakharenkov.

The Tyumen gas region is today a large and complicated activity. Five large fields are in industrial operation, and 19 installations for the integrated treatment of gas, to which more than 640 wells are connected, are operating. A high-capacity system of trunk gas pipelines more than 12,000 kilometers long has been created, with gas-pumping stations that have a total power of 5 million kW. The country's central regions, the Urals and the Kuzbass [Kuznetsk Coal Basin] are being supplied reliably with Siberian gas. This year, during the first 10 months, 1.6 billion cubic meters more than had been planned were fed into the transport arterials.

And all this started with the first gas gusher, which struck on 21 September 1953 on the outskirts of the old village of Berezovo. In 1964 the first operating wells were drilled at adjacent fields that had been explored up to that time.

The recovery ahead of time of the trillionth cubic meter of the "blue fuel" was helped by the solution of a number of complicated scientific and technical problems connected with organizing the recovery and transport of gas under permafrost conditions. Large-module type construction of the integrated gas-treatment installation, which has high unit capacity, the drilling of wells of increased diameter, and the laying of pipelines of increased throughput were put into practice here in creative collaboration with scientists and designers.

More than 50 scientific-research and production organizations of 17 ministries and agencies are helping the Siberians to build up the gas-field facilities in accordance with the latest word in science and technology. For example, the technology for drilling and operating wells with 8-inch strings was developed by Tyumengazprom [Tyumen Gas Industry Association] specialists jointly with VNIIGaz [All-Union Scientific-Research Institute for Natural Gases] and TyumenNIIGiprogaz [Tyumen State Institute for Scientific Research and the Design of Gas Industry Enterprises]. The cost of their construction increased 9 percent, but then productivity rose 2-fold. Moreover, the use of such wells at Medvezhye and Urengoy will enable the number of them to be cut almost in half and drilling costs to be reduced by a fourth.

The honorary duty shift at Urengoy UKPG-2 was not made up at random. In showing the installation to his colleagues, Urengoygazdobycha [Urengoy Gas-Recovery Association] deputy director S. Pashin cited some interesting facts. Bold engineering solutions that were adopted during construction enabled 2 million rubles to be saved. The installation has a higher capacity than those located at Igrim and at Medvezhye. This is a result of a collective study by specialists of the Central Design Bureau for Petroleum Equipment and the designers and production workers who developed and introduced the absorbents, which could dry 5 million, and later 10 million, cubic meters of gas per day.

And S. Pashin points out to the guests still another progeny of the Urengoyers--the test installation for producing motor fuel from condensate. In 3 years the firstling of gas chemistry produced 35,000 tons of diesel fuel and gasoline for local users.

There have been many problems during the burgeoning development of Urengoy, but already today it is the largest supplier of natural gas for the country's industry, and it supports the main increase in recovery for the gas branch. The city of Novyy Urengoy is growing and is being built up rapidly. Next is the development of new gas deposits. North of Urengoy lies the Yamburg field. The first detachments of drillers and construction workers, who have resolved to prepare the new treasury for operation by the end of the five-year plan, have landed there. While recovery of the first trillion cubic meters of Tyumen gas took almost 16 years, the gasfield workers are planning the second trillion much earlier.

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BAKU MANUFACTURE OF WELL CHAMBERS FOR GASLIFT EQUIPMENT DESCRIBED

Baku VYSHKA in Russian 18 Jan 83 p 1

[Article by K. Manafov: "For Gaslift Complexes"]

[Text] Our party's 26th congress aimed the country's oilfield workers at the use of new methods for stimulating oil-bearing formations and for increasing thereby the recovery of oil from the ground. A special thrust was made for introduction of the progressive gaslift method of operating wells. Baku's machinebuilders played an important role in solving this national economic task. The Plant imeni Dzherzhinskiy is the only enterprise in the country that makes gas-lift complexes. The main components of this equipment--the well chamber, which operates at a great depth and is filled with precision parts--was, until recently, shipped to the Dzerzhinskers by subcontractors--the Borisoglebskiy Chemical Machinebuilding Plant, which is in Voronezh Oblast. But now, since the first days of the new year, production of the well chambers has been conquered at the Baku Machinebuilding Plant imeni Volodarskiy.

The plant's chief designer, N. Kir'yanov, tells how the machinebuilders, in collaboration with collectives of VNIIPTneftemash [All-Union Scientific-Research and Industrial-Design Institute for Petroleum Machinebuilding] and Neftemash OKB [Special Design Bureau], managed in a short time to prepare the production facility for serial output of the new product. Ordinarily, from development to mastery of this type of article, at least 1½-2 years are required, sometimes even more. Only 4 months elapsed here. The creation of an integrated brigade for the introduction, made up of specialists of both institutes and of the plant itself, helped to save time. The department became their workplace. Thanks to this close unity of science and production and to the precise parceling out of tasks, all questions were resolved energetically and responsively. The tooling was designed here, where it was fabricated, and the article itself was modernized and made more producible and less labor intensive to manufacture. All the prerequisites were created at the plant for reorganizing production and for introducing the new article rapidly.

...It is the forging section. This is the workplace of experienced forger Eduard Mnatsakanov. They always trust him to start the conquest of new types of articles. And this time also the cadre worker willingly undertakes the unknown job. The order was unusual also because of the fact that the machinebuilders and the scientists had changed considerably the structure of the well chamber. The body of the new article, instead of being welded from three parts, was entirely forged. At first there were few who believed in this: is it possible indeed to forge the huge

two-meter thing on existing hammers? And so Mnatsakanov was the first at the plant to master this technology--to fabricate an all-forged body.

We watched the forger's work. Now he took a two-meter blank that had been heated to redness and, virtuoso style, began to rotate it under the hammer like a plaything. He squeezed one end on the die, and then the other, and obtained the necessary configuration. Setting it aside, he took another pipe. And thus, one after the other, he forged the oval form of the jacket body. A pile of entirely forged bodies of well chambers piled up near the hammer.

"A double advantage is obtained--they are less labor intensive to produce and are more reliable and longer lived in operation," chief designer of the Plant N. Kir'yanov explained.

But it still is not very convenient for the worker to turn the two-meter blank under the hammer. In coming days the situation will be changed. OKB specialists have fabricated a manipulator which will turn the part itself on all sides by means of a roller.

"Here is another innovation," chief plant manufacturing engineer N. Kozlovtsev joins the conversation. And he shows die-forged guides. They were made by Borisoglebskiy machinebuilders from rolled metal by the method of lathe machining and working on milling machines. Specialists of the Laboratory of Metal Pressworking of VNIIPTneftemash, jointly with the plant, converted the part to low-waste technology. The guides also were manufactured by means of a special die. Then forger R. Mnatsakanov, under the supervision of institute lead engineer S. Godzhayev, forged 300 of these blanks in the first 10-day period of January. They are very close in configuration to the finished parts. The conversion to forging saves metal and frees machine tools and people.

Remarkable changes have also occurred at other sections associated with introduction of the new product. For the first time the machinebuilders have begun to weld in a carbon-dioxide gas medium. The welding semiautomaton has "migrated" from the institute to the plant. At the plant, P. Pupykin, staffworker of the Welding Laboratory of VNIIPTneftemash, teaches the welders' brigade of F. Amiraslanov how to service the semiautomatic machine. Tens of components of the well chamber have been welded by this method. They arrive at the assembly section continuously.

In the first days of the new year an assemblers' brigade was organized from experienced workers--Ye. Koldyrkayev, G. Kasimov and B. Salikov. VNIIPTneftemash staff workers P. Astrivanets, V. Murnov and A. Kurbanov can often be seen alongside them.

During the first 10-day period of January more than 20 sets of parts and components--housings and shafts--had accumulated at the workplaces of the assembler-operators. Each was thoroughly checked prior to assembly. There's enough work for everyone. On a special device, Ye. Koldyrkayev bores an orifice in the "jackets." At this time B. Salikov does the general assembly and G. Kasimov readies the next parts. The lathe and milling-machine operators work well. The pipethreading machine had to be modernized for boring and making threads in the "jackets." This enabled turner I. Vladimirov to machine parts with high precision and great speed.

Strenuous work is going on in all parts of the plant. Already 80 newwell chambers have been produced, and the plan for January is 150. It is planned to produce 400 units in the first quarter, and, by the end of the year, 2,000 new articles are to be transmitted to the Plant imeni Dzerzhinskiy. In order to satisfy the oilfield workers' requirements for gaslift equipment, well-chamber output is to be brought up to 6,000 per year. Baku's machinebuilders are being oriented to this.

OIL AND GAS

BASHNEFT' OIL-INDUSTRY MANAGER DESCRIBES RECENT AWARD

Moscow PRAVDA in Russian 30 Dec 82 p 2

[Interview with Ye. [illegible], general director of Bashneft' Association, by PRAVDA correspondent V. Shalganov: "The Color of Oil [illegible]"]

[Text] The Bashneft' [Bashkirian Oil Industry Association] collective was named among the winners of the All-Union socialist competition in celebration of the 60th anniversary of the forming of the USSR. It was awarded the challenge Red Banner of the CPSU Central Committee, the USSR Council of Ministers, the AUCCTU, and the Komsomol Central Committee with inscription on the All-Union Honor Plaque at the USSR VDNKh [USSR Exhibition of Achievements of the National Economy]. [illegible], association general director, tells PRAVDA correspondent V. Shalganov how this labor victory was achieved.

[Question] Yevgeniy Mikhaylovich, crude oil is rightly called "black gold." And it is often being recovered at old oilfields of lands along the Volga. In truth the golden hands of those whose experience, skills and innovative elan help in the overall success in no small degree. Is that the case?

[Answer] Yes. Many of us know about the operator of the [illegible] Oil and Gas Recovery Administration, Ye. [illegible], who began his labor career as a 14-year old in 1944. [illegible] is well known for high pride in his work and for his [illegible] and initiative. He has done much that is good. He was a pioneer in the [illegible] of high quality of service and increased [illegible] well operation, he has participated in introducing many innovations, and [illegible] ago he became a USSR State Prize winner. The same prize was awarded to [illegible] brigade foreman [illegible]. [illegible], incidentally, was [illegible] in a year of a [illegible] collective [illegible] a short time brought it into the lead.

[illegible] people, and [illegible] are many of them in the [illegible] collective, [illegible] examples [illegible]. There are also whole [illegible].

[illegible]

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ABIOGENIC PETROLEUM IN BASEMENT ROCKS COULD BE PRACTICALLY INEXHAUSTIBLE

Kiev GEOLOGICHESKIY ZHURNAL in Russian Vol 42 No 5, Sep-Oct 82 pp 1-9

[Article by V. B. Porfir'yev, V. A. Krayushkin and V. P. Klochko of the Institute of Geological Sciences, UkSSR Academy of Sciences: "New Prospects and Paths for Developing Work in the USSR and UkSSR on the Problem of the Inorganic Nature of Petroleum and for Prospecting for Commercial Accumulations of It"]

[Excerpts] We do not share these notions, since, according to our data, all crude oil and natural gas in the ground are inorganic in nature. Their source is the earth's upper mantle, from which oil and gas migrated during Tertiary and Quaternary time, along planetary and other fractures into the sedimentary series of all the basins through their crystalline basement. Based upon this, the earth's crystalline crust as a whole and the subcrustal area (the upper mantle) should possess a significant, practically inexhaustible oil and gas potential. This is confirmed by factual data that neither the Exxon Corporation nor other forecasts considered, as the result of an attachment of their authors solely to the organic genesis of oil and gas.

The factual data that we have collected, analyzed and generalized about the detection of commercial quantities of oil and gas in the crystalline basement rocks of various sedimentary basins and about oil and gas shows in igneous and metamorphic crystalline rocks of the Precambrium shield supplies a basis for drawing the following conclusions.

Deposits of oil and gas in crystalline basement rocks are by no means rare geological occurrences in mineralogical knowledge. Aside from the universal or widespread noncommercial and semicommercial accumulations of these useful minerals, more than 260 commercial-scale oil and gas fields that are partially or completely associated with the crystalline basement rocks of sedimentary basins have been found and are being developed on all continents (except for Antarctica) and their shelves, according to our research. In our country the Achakskoye, Gugurtli, Kazanskoye, Myl'dzhinskoye, Punginskoye, Luginetskoye and Kushchevskoye gas fields and the Sovetsko-Sosninsko-Medvedovskoye and Yuzhno-Chermshanskoye oilfields are associated with crystalline rocks [2, 11 and 12].

Wells that have been drilled into crystalline basement rocks yield free flows of crude with flow rates, as a rule, of several tens to several hundred tons per day, and even as much as 2,300 tons per day, or flows of gas of several tens of thousands to 1-3 million m^3 per day. The productive portion of the basement's crystalline complex, which is associated with dispersion zones as a consequence of

regional tectonic fracturing, with zones of regional fractures and a multitude of local fractures, and also with paleoerosional disintegration, weathering and leaching, is a fissured, honeycombed or porous collector of oil and gas. Indeed, the life of a well that recovers oil or gas only from a fractured crystalline collector of magmatic or metamorphic origin can exceed 50 years, and its cumulative recovery of oil or gas can reach an estimated 300,000 tons of standard fuel equivalent (based upon crude oil).

Modern geography and geology of commercial accumulations of oil and gas in crystalline basement rocks are such that one can speak boldly about the consistent regional presence, by area and by cross-section, of commercial quantities of these rocks in any sedimentary basins, but especially in those that are genetically associated with cratonal or epeirogenetic rifts and paleorifts. This conclusion is confirmed by discoveries of commercial (including supergigantic and gigantic) size oil and gas deposits in geological provinces that are varied in the tectonic conditions of their sedimentation, such as, for example, the intermontane basins of Venezuela (the La Paz and Mara oilfields) and California (the Kern River field), the northern slope of the Guiana shield (the Orinoco oil belt), the cratonic basins of Algeria (the Zarzaiten field), Libya (the Sarir, Audzhila-Nafora-Amal and other fields), West Siberia (the Kazanskoye, Mylʹdzhinsioye and other gas and oil fields), Cisandea (the Chalvako field) and West Canada (the Peace River field), the submontane troughs and unstable borderland of California (the Wilmington and Long Beach fields), the Red Sea-Suez intrachthonic rift (the Gemza, Khurgada, and Ras-Garib fields) and others.

Of course, some of the most cogent, indisputable and direct evidence in favor of the abiogenetic origin in the mantle of oil and gas are the oil and gas shows of various scales and types that are confined to igneous and metamorphic crystalline rocks of the Archean shields, where there is a complete absence of sedimentary rocks. Precisely such oil and gas shows, including those of a regional nature, exist in the Canadian, Baltic, Ukrainian, Aldan, African, Guianian, Brazilian and Australian shields. Let us dwell just briefly on some of the most interesting ones. Thus, the presence of oil and gas in igneous rocks has been established on the Kola Peninsula. Intense gas shows (blowouts of flushing fluids and gushing) from alkaline basic and ultrabasic rocks deposited among Archean gneisses and other rocks have been recorded here in exploratory holes, coming from primary microcracks and channels formed by pores between minerals in various igneous rocks. The following contents (cm^3/kg) have been established for this gas from chibinites, ristchorrites, iolites, malignites, and urtites; methane 9.37-49.2, ethane 0.37-1.40, propane 0.016-0.23, butane 0.001-0.021, and also the presence of pentane and hexane. Gas in which the content (in cm^3/kg) of methane is 0.99-54.02, ethane 0.02-1.44, propane 0.01-0.24 and butane less than 0.05 has also been separated from gas-and-liquid inclusions in such rock-forming minerals as nepheline, eudialyte, sphene, aegirine, albite and apatite, which are represented by 74 samples. Moreover, the presence of black vaseline-like bitumens for which C^{12}/C^{13} equals 91.70 (for naturally occurring crudes the C^{12}/C^{13} lies in the 91.0-91.8 interval) has been established for all the igneous rocks of the Khibiny massif.

Igneous rocks of the Lovozerskiy massif have also proved to be gas-bearing. The gas, which precipitates from microcracks in foyaites, lujaurites, and juvites, contains (in cm^3/kg) methane 6.75-27.33, ethane 0.45-1.27, propane 0.32-0.85 and less than 0.008 butane. Moreover, gas with a content (cm^3/kg) of methane 1.74-5.32, ethane 0.07-0.36 and propane less than 0.01 [9],

has escaped from primary microcracks in melteigites, iolites and turjavites that were discovered by exploratory holes at the Salmagorskiy massif. To this can also be added data on hole SG-3 that is being drilled in Pechengskiy Rayon on the Kola Peninsula. Having reached a depth of 10,780 meters, it found volcanogenic-sedimentary formations (0-6,800 meters) and a granite layer (6,800-10,780 meters) with an age of 2.5-2.7 billion years and a formation temperature of 180 degrees C (instead of 100 degrees C) at a depth of 10,000 meters. In the 4,500-8,800 meter interval lies a waveguide--a zone with low seismic speeds, within which zones of crushed igneous rocks were discovered at the 4,500-4,600 and 6,000-6,500 meter intervals. One of the previously discovered dispersal zones lies in a sill in the 1,600-1,800 meter interval that contains sulfide ores with commercial concentrations of copper and nickel. A source of natural brine, as well as of helium, hydrogen, nitrogen and hydrocarbons, was found in this hole at a depth of 6,500 meters, indicative of the continuous circulation of mineralized solutions along thick fracture zones in the depths of the Baltic shield [3 and 6].

According to [4], the rocks of the Khibiny alkaline massif can be divided into two groups, based upon the temperatures at which they were formed. The first group includes chibinites, "lyavochorrites" [transliterated] and foyaites, since the temperature of the start of the crystallization of magmatic fushion that gave birth to these rocks was 1,085-1,100 degrees C, and the second group includes ristchorrites, iolites, iolite-urtites and apatite-nepheline rocks that were formed at a temperature of 1,100-1,200 degrees C. The Khibiny massif is located in a zone of tectonic contact of the Archean granite-gneisses and Proterozoic volcanic-sedimentary rocks, presenting a multiple-phase conical intrusion that is made up, from the periphery to the center, of annular bodies of alkaline and nepheline syenites and massive chibinites and trachytic chibinite, ristchorrite, urtite-melteigite and apatite-nepheline rocks, and "lyavochorrites" and foyaites whose radiological age is 300-400 million years. Manifestations of albitization, microclinization, sodalitization, cancrinitization, natrolitization, egeritization, amphibolization and biotitization and coarsening of structure--porphyroblastesis of nepheline and growth of perthites--were observed in them that do not go beyond the framework of typical autometasomatic transformations of magmatic rocks. The temperature of these processes here is 500-700 degrees C. The confinement of the Khibiny massif to the zone of tectonomagmatic activization within the Baltic shield caused the entrance of alkaline magma (characteristic for rift and paleorift zones) along deep faulting that goes off into the subcrustal zone, and the primarily basaltic magma, in the process of its evolution, caused all the diversity of the Khibiny massif rocks.

That enormous volume of this magma that formed the Khibiny and Lovozero massifs can originate only directly from the mantle [1]. This is confirmed by the fact that mantle carbon [10] was the primary carbon of the gases from the gas-and-liquid introductions in the rocks of the Khibiny, Lovozero and Salmagorskiy massifs. And although the abovementioned hydrocarbon contents of igneous rocks of the Kole Peninsuls is not in and of itself extremely great, it testifies not only to a saturation of the mantle with hydrocarbon gas but also to an unimaginably enormous total amount of hydrocarbon gases, if one multiplies the average content of methane and higher gases by the weight of the Khibiny, Lobozero and Salmagorskiy plutons. Thus, these mineralogical circumstances, which have a regional and consistent distribution here by cross-section and by area, appear in a completely different light.

Rocks of the Ukrainian shield (UShch) also are methane-bearing regionally, in one form or another. The presence of methane has been established in the composition of gas-and-liquid inclusions of minerals which make up the pegmatite-containing granites that "surround" the massif, which is composed of gabbro-labradorite granitoids and alkaline syenites of the Korotsten' pluton. The C^{12}/C^{13} gases in the quartz-forming solutions of cavernous pegmatites here lie within the 89.28-92.15 percent interval. In the gas-and-liquid inclusions in smoky quartz from pegmatites of the Korsun-Novomirgorod pluton, which is made up of labradorites, gabbro-labradorite, rapakivi granites and hybrid alkaline rocks, the composition of the gas phase is characterized by high methane content (up to 50 percent by volume), while that of the liquid phase is marked by high saturation with salts, including sodium chloride. The methane content in the composition of the gas-and-liquid inclusions of pegmatites and quartz veins, and also of the graphite-containing quartzes that are deposited in the Zaval'ye among Ukrainian shield gneisses, is 1.5-10.0 percent by volume. The C^{12}/C^{13} for this methane is 91.73, that is, the methane is enriched by the light carbon isotope in comparison with the carbonic acid which is contained along with it, since its C^{12}/C^{13} is determined here by the value 90.24 [5].

The data on the Krivoy Rog iron-ore basin, which is also within the Ukrainian shield, is even more interesting. During mining excavation at the underground mines of this basin, flows of combustible gas were repeatedly observed which led in some cases to accidental ignition of the gas. Analyses of this gas indicated that it was 80 percent methane and less than 3.9 percent heavy hydrocarbons [7 and 13].

The presence of water in the upper part of the crystalline basement, which has been established by geophysicists, should not be surprising: with increase in the depth of discovery, other collector zones that are lower in cross-section also appear in the basement, the capacity and frequency of encounter of which, according to the data on Minnebayevo hole No 20,000, are in this case increased. The analogous case is true also in the case of the impermeability, that is, the "dryness" of the upper part of the crystalline basement. For example, a high-flow gas and oil gusher was obtained from granite in the Oymash area in the Mangyshlak depression, 140 meters below the impermeable roof of the basement, 800 meters below in the Talley-Igayskaya area, and 1,500 meters below the roof an impermeable section of crystalline rocks of the West Siberian basement in the Maloichskaya area. These cases are a scientific, geological foundation for our recommendation that well penetration in crystalline basement rocks of any sedimentary basin go at least 800-1,500 meters. Even if a commercial deposit of oil and gas is discovered in the upper part of the crystalline basement, drilling should not be terminated: still larger deposits of them can be found by drilling in a lower cross-section, since, according to the data of Minnebayevo hole No 20,000, the greater the depth of the hole in crystalline basements, the more frequent the alternation therein of impermeable (cap) zones with dispersed, crushed and fractured (collector) zones, the capacity of the latter being increased with depth [8]. It follows from this that all the known oil and gas fields in sedimentary series of any basins should be explored or re-explored at the maximum technically feasible depth--not just to the crystalline basement but also within this basement.

The factual data that has been set forth scientifically substantiates prospecting for new industrial accumulations of oil and gas in the crystalline rocks of the basement of any sedimentary basins where the basement lies at a depth of 10-12 km, which nowadays is technically feasible for drilling wells. This same data,

especially that which touches on the presence of oil and gas in Precambrium shields, confirms our theory about the deep, abiogenic origin in the mantle of all oil and gas accumulations within the earth's depths, which has been set forth in works [2, 11 and 12].

From this point of view, and also for purposes of further developing in the USSR as a whole, and in the UkSSR in particular, the appropriate scientific research and geological exploration, it is desirable to create an interagency coordinating scientific council or center under the UkSSR AN [Academy of Sciences] Presidium on the problem of the abiogenic origin of oil and natural gas in the mantle and of studying the presence of oil and gas in the crystalline basement of sedimentary basins within the USSR. The council should include representatives of the USSR and UkSSR AN's, Minneftеprom [Ministry of Petroleum Industry], Mingazprom [Ministry of Gas Industry], USSR Mingeo [Ministry of Geology], USSR and UkSSR Gosplans and USSR and UkSSR Ministries of Higher and Specialized Secondary Education, who should take appropriate steps of an organizational and financial nature for the successful functioning of said council, for conducting in Kiev no later than May 1983 the First All-Union Conference on the problem, "The Abiogenic Origin in the Mantle of Oil and Gas and the Prospects That Oil and Gas Are Present in the Basement's Crystalline Rocks" (with 250-300 participants from other cities and countries) under the aegis of the UkSSR AN, and for insuring the publication ahead of time by Nedra Izdatel'stvo of the papers for this conference.

It is desirable to increase the scale of operations in the fields of production, experimental procedures, project assignments and scientific work concerning assessment of the prospects for finding oil and gas in the basement's crystalline rocks by detailed mapping of the formations that make up the basement, using a complex of geophysical methods, and by a detailed study of the internal structure of the basement in the appropriate oil and gas bearing basins, and also of the basement's stratigraphy, tectonics, paleomorphology, petrography, mineralogy and petrophysics. It is desirable to support the practice of finding basement rocks at least 1,000 meters thick in prospecting and exploration holes and at least 2,000 meters thick in key and appraisal holes, that is, at the technically achievable depth, developing an optimal technology for sinking, casing, logging and completing holes in these rocks, separately for each oil and gas bearing region of the UkSSR and USSR, and to support study of the composition and geochemistry of dispersed organic matter, bituminoids and underground waters of the basement with use of the most modern methods of analysis, including those of nuclear physics. It is necessary, apparently, to require Mingeo, Mingazprom and Minneftеprom to assign plan indicators, by separate line item, for the geological task and for the supplying of materials and equipment for the geophysical and drilling work in the crystalline basement in 1983-1985 and later, including, especially, indicators for UkSSR Mingeo, Ukrneft' [Ukrainian Oil Production Association], Belorusneft' [Belorussian Oil Production Association], Tatneft' [Tatar Oil Production Association] and Mangyshlakneft' [Mangyshlak Oil Production Association], and also for GlavTyumen'geologiya [Main Administration for Geological Operations in Tyumen Oblast] and GlavTyumenneftegaz [Main Administration for the Oil and Gas Industry in Tyumen Oblast].

One should not be allowed to go slow either with the adoption of instructional measures for starting superdeep drilling in 1983-1985 by Ukrneft' in the Ciscarpathian trough with appraisal hole No 1, Pasechnaya (7,500 meters), and exploratory well No 2, Shevchenkovo (8,000 meters), in order to assess the commercial presence of oil and gas in commercial quantities in the prealpine epiplatform basement of

the Vadvornyanskiy and Dolinsk oilfield regions, and also with appraisal hole No 1, Yuzhnaya Akhtyrskaya (8,000 meters), to assess the presence of oil and gas in commercial quantities in sediments of pre-Devonian age, and also of rocks of the Upper Proterozoic-Lower Paleozoic and of Archean-Lower Proterozoic masses in the zone of a reef graben that is embedded in the Dnepr-Donetsk depression, and the drilling by UkSSR Mingeo of hole No 501, Oktyabr'skaya (7,000 meters), for assessing the presence of oil and gas in a heterogenous and heterochronic basement of the Crimean-Black Sea oil and gas bearing area [11 and 12]. Of course, of the greatest significance of them all is well No 2 of Shevchenkovo, which should be drilled in direct proximity to Shevchenkovo No 1 (7,250 meters), which has already been drilled, in order to tap with the drill string those thick oil and gas bearing deposits in the 6,000-7,520 meter interval that had not been tested for influx, not only because of the condition of hole No 1 of Shevchenkovo but also because of a lack of the appropriate equipment (the formation pressure is 1,500 kg/cm^2 and the formation temperature is on the order of 200 degrees C). Only the drilling of hole No 2 of Shevchenkovo can create a basically new front for deep prospecting for oil and gas and provide the UkSSR with basically new reserves of power-engineering raw material.

To be or not to be, or, what else is to be done? Is the "bottom of the world's oil well" already visible? In our opinion, only the information that was set forth above, which presents basically new prospects, ways and directions for developing a revolutionary oil and gas geology and oil and gas industry, based upon the abiogenic origin in the mantle of oil and gas and on deep and superdeep prospecting, exploration and industrial mastery of the basically new and practically inexhaustible resources in the earth's crystalline basement and suberustal area, gives the only convincing answer to this question.

[Summary [printed in English in the original text as follows]

Data available in home and foreign literature are generalized for 260 oil and gas deposits which contain partially or completely commercial reserves in the basement rocks and oil and gas accumulations in the shield rocks. These deposits comprise 70 oil and gas giants and supergiants. Coming from these and other materials the authors consider and substantiate new measures on successful development of work associated with the problem of abiogenic, mantle genesis of oil and gas and search for their commercial pools.

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NEW PROPOSED SYSTEM FOR CLASSIFYING OIL, GAS BEARING BASINS

Kiev GEOLOGICHESKIY ZHURNAL in Russian Vol 42 No 5, Sep-Oct 82 pp 19-26

[Article by R. M. Novosiletskiy of UkrNIGRI [Ukrainian Branch of Scientific-Research Institute for Geological Exploration]: "A New Principle for Classifying Oil and Gas Bearing Basins"]

[Text] Many researchers understand an oil and gas bearing basin (OGB) to mean the most depressed portion of a sedimentary basin, in which the intensive generation of hydrocarbons has occurred, deposits have been formed and conditions have existed for preserving them up to the present [2, 4 and 5]. Right now up to 600 sedimentary basins are known, 160 of which are known to bear oil and gas in commercial amounts and can thus be considered OGB's.

The existing classifications for OGB's are in practice based only upon geomorphological and tectonic indications (the basins of ancient and recent platforms, bordering and inner syneclises, metageosynclinals--intracontinental simple and complex, graben and rift, shoreline and intermontane, and so on), and so they do not yield information about the factors that determine the scale of generation of hydrocarbons and of the formation of deposits thereof. These classifications do not consider the thickness of the sediments in the more depressed portion of the sedimentary basin and such important factors as the geothermal regime in the depths, the distribution by cross-section of rock masses with average (0.5-1.5 percent) or high (more than 1.5 percent) content of buried organic substance (OS), as well as its quality and degree of catagenetic transformation, the distribution of fluid rests in the cross-section, the hydrodynamic conditions, and the history of the basin's geological development, upon which the scale of hydrocarbon generation and the forming and reforming of deposits depend.

It should be noted that many of the factors that influence the forming of oil and gas (such as temperature, pressure, degree of catagenetic transformation of the rocks and of the OS buried in them) depend upon the thickness of the sediments. Therefore, OGB classification should consider the thickness and depth of sediment deposition, to include the rock masses of metamorphic zones, the spread of fluid rests in the cross-section, the thickness of the rocks with average or high buried OS content of a definite type (sapropelic, sapropelic-humic and humic) and the history of the basin's development.

Achievements in the area of geochemistry and the establishment of the genesis of hydrocarbons [3 and 6] and recognition of the importance of the thermobaric conditions

that influence both the lithogenesis of the rocks and the scale of the forming of oil and gas and also the forming of hydrocarbon deposits will enable the creation of an OGB classification to be approached from a new standpoint.

Geological exploration practice has established that, as the thickness of sediments increases, the number of oil and gas fields and their sizes increase and the hydrocarbon systems become lighter. This is probably connected with the burial of the OS under the thermobaric conditions of the main zone for the forming of gas (t_{form} > 110 degrees C and depth is more than 2-3 km).

Formation temperature increases with increase in sediment thickness. Its maximum value at the base of the sedimentary cover of the most depressed part of a sedimentary basin, according to rough computations, sometimes reaches 750 degrees C, or, with the introduction of intrusions in local sections, 1,300 degrees C.

Within limits, OBG's can be broken down into four thermobaric zones (TP-zones): first, those with temperature in the sedimentary formations of less than 110 degrees C; second, those with temperature of 110-175 degrees C; third, those with temperature of 175-300 degrees C; and fourth, those with temperature of more than 300 degrees C [6]. In TP-zone 1 the OS loses a large number of heteroatoms and the main mass of the crude-oil components are generated within it, provided that gas arrives from lower horizons. The intense forming of hydrocarbon gas components occurs in TP-zone 2, in which the formation waters are gas-saturated to the maximum (1-1.5 m^3/m^3). In TP-zone 3, with the development of deep-thermal metamorphism of rocks and of the OS, a large amount of water, methane, hydrogen, carbon-dioxide gas and other volatile substances is generated. For TP-zone 4, with increase in pressure and temperature, an increase in the intensity of metamorphic processes and the generation of volatile substances, in whose composition water, carbon-dioxide gas, hydrogen, nitrogen and other fluid components predominate, is characteristic.

The amount of the pressure in the first and second zones depends to a great extent upon rock transformation processes in the two lower zones (TP-zones 3 and 4). Widespread anomalously high formation pressures (AHFP's) are characteristic of the latter zones.

In OGB's with three thermobaric zones, local intrusions of fluids under AHFP from lower horizons into the first zone are encountered, and, in OGB's with four zones, water and gas often break through under AHFP from the depths into the sediments of an upper thermobaric zone, and sometimes even to the surface in the form of mud volcanoes.

It follows from what has been said that thermobaric conditions in the first and second zones are not identical in all OGB's but depend upon the number of thermobaric zones and their boundaries. This circumstance greatly influences the distribution of hydrocarbon deposits in upper rock strata with moderate temperature.

A study of the distribution of hydrocarbon deposits in numerous OGB's of the world (the Dnepr-Donetsk, Pripyat, Libyan, Anglo-Paris, North Ciscarpathian, Ciscarpathian-Balkan, Persian Gulf, South Caspian and many others) has shown that hydrocarbon deposits are not found in peripheral parts that have a temperature of less than 110 degrees C and are far from the area of maximum depression of the sediments. Hydrocarbon accumulations appear only in sections of sedimentary submergence where the OS is buried at depths with a temperature of 120-150 degrees C. The following

are examples of this: the Dnepr-Donetsk, South Caspian, Persian Gulf and other U.S.S.R. In the Dnepr-Donetsk depression, the oilfields (Pereshkoye, Valuyevitskoye, Yunashirishchenskoye and others) are in a region where sediments are submerged at depths with a temperature of more than 120 degrees C. Oil and gas-condensate fields are widely distributed in the zone where sedimentary formations are submerged at depths with a temperature of less than 175-200 degrees C (the Kachanovskoye, Glinsko-Rozbyshevskoye, and the Velikobubnovskoye fields). The wide distribution in the depression of gas fields with a relatively low condensate content is associated with an area where sediments are submerged to depths with a temperature of 200-300 degrees C (the west Krestishchenskoye and Yefremovskoye fields).

At depths of less than 1,500 meters, where the temperature is less than 40-60 degrees C, in rock masses with a low (less than 0.5 percent) buried-OM content, under favorable geological conditions, dry-gas deposits are formed as a result of the predominantly vertical migration within the area of maximum depression of sedimentary formations and in places where thin sediments are close to large depressions (the West Siberian, North Ciscarpathian, Tyuringskiy, Transylvanian, North Alaskan, and Cis-Appalachian basins), and they have been preserved for a long time. Under these circumstances, oil deposits are formed in sediments with high OM content. Close to the central part of the depressions, they are light and medium, with a high or moderate amount (more than 50 m^3/m^3) of dissolved gas. In peripheral areas, the oil's density increases in the direction of reduced sediment thickness with the initial stages of transformation of the buried OM (stages $\mathcal{B}_1$ and $\mathcal{B}_2$), while the gas content decreases to a minimum value (3-5 m^3/m^3), which leads in some cases to the forming of large fields of heavy oil (the western Canadian, Orinoco, and Volgaural basins).

An examination of the connection between the thermobaric conditions and the scale of hydrocarbon generation, taking into account the history of the basin's geological development, has enabled us to create a new classification of OGB's (see the table). Depending upon the thermobaric conditions in the sediments, oil and gas bearing basins are subdivided into three categories, and two groups can be singled out within each of them in accordance with the peculiarities of the history of their geological development, and these groups can, in turn, be subdivided into three types, depending upon the nature of the fluid rests above the rock masses with increased buried-OM content.

It is also possible to single out within each group two subgroups in accordance with the time of entry of the OM-containing sediments into the main zone of gas formation, and the deep-water submarine zone can be further subdivided into three subtypes according to the continuation of the rock strata with high OM content.

In the oil and gas basins of the first category, the maximum temperature in the most deeply buried part of the crystalline basement exceeds 300 degrees C, and the thickness of the sedimentary mantle is usually more than 10,000 meters. All their thermobaric zones (oil-, oil-gas-, and gas-formation) are represented in the cross-section of this category of oil and gas basins.

The second category of oil and gas bearing basins is characterized in the most deep-seated part of the sedimentary basins by temperatures of 175-300 degrees C, and the thickness of the sedimentary formations varies from 5,000 to 10,000 meters. There can be three thermobaric zones (the zone of oil-formation is absent).

Classification of Oil and Gas Bearing Basins by Thermobaric Regime, History of Geological Development, Nature of Fluid Rests, and Distribution of Rock Masses with High (More Than 0.5 Percent) Organic-Substance Content by Thermobaric Zone

According to the modern temperature regime	Category (K)	1. Maximum temperature in the sedimentary cover (t_{basic}) is more than 300 degrees C, and sediment thickness is more than 10 km. 2. Maximum temperature in the sedimentary cover (t_{basic}) is 175-300 degrees C, and sediment thickness is 6-10 km. 3. Maximum temperature in the sedimentary cover (t_{basic}) is 110-175 degrees C, and sediment thickness is 3-6 km.		
According to the history of geological development	Group (G)	1. Simple structure without large gaps in sediment accumulation. 2. Complex structure with large gaps in sediment accumulation (paleotemperature nonconformities).	Subgroup (Sg)	1. Early (Paleozoic) entry of OS-containing sediments into the main zone of gas formation. 2. Large (Mesozoic) entry of OS-containing sediments into the main zone of gas formation.
According to the current distribution of high-OS content rock under fluid rests in the two upper thermobaric zones	Type (T)	1. Regional evaporative masses above OS-containing rocks. 2. Regional clayey masses above OS-containing rocks. 3. Local fluid rests above OS-containing rocks.	Subtype (St)	1. Rocks with increased OS content in TP-zones 1 and 2. 2. Rocks with increased OS content in TP-zone 2. 3. Rocks with increased OS content in TP-zone 1.

The third category includes OGB's with maximum temperature of 110-175 degrees C in the most depressed portion of the crystalline basement, which corresponds to a sedimentary-complex thickness of 3,000-6,000 meters. Two thermobaric zones (TP-zones 1 and 2) can be singled out in these basins.

It should be noted that the thermobaric conditions of third-category basins are characteristic for individual peripheral sections of second-category OGB's, while second-category OGB's sometimes have whole regions with temperature and pressures that are characterized by the conditions of third and second category basins.

The noted variation in thermobaric conditions will enable four hydrodynamic zones to be singled out in OGB's: a hydrostatic-pressure zone and uncovered, semicovered and open zones of AHFP distribution [7]. Change in the geological structure will enable subzones to be singled out within zones, and, within them, anticlinal uplifts and other types of structure.

OGB's are subdivided into two groups, according to their history of geological development and paleotemperature regime, into simple and complex structures. The first group includes basins of simple structure--homogeneous basins within which

frequently are large and unique in their reserves, have been widely propagated in the oil and gas bearing basins of the first category, of the first and second subtypes.

The singling out of subtypes by category of oil and gas bearing basin takes into consideration the growth in intensity of hydrocarbon generation with increase in the capacity of the sedimentary rocks and the preponderant formation of oily hydrocarbons within TP-zone 1, but of gas-forming hydrocarbons in TP-zone 2 and in the deeper horizons, where the prerequisites for their accumulation are absent. An important role in hydrocarbon generation and in the forming of deposits of them within first-category OGB's is played by sediments of TP-zones 3 and 4, as well as by dislocations and deep fractures, along which volatile substances (methane, hydrogen, carbon-dioxide gas, ammonia and other substances), which escape during transformation of the rocks and of the OS buried in them, migrate vertically from the indicated zones, which leads, in the final analysis, to the forming of a large number of medium-sized and large accumulations of oil, gas condensate and gas in the upperlying sedimentary formations of TR-zones 1 and 2.

It is evident from the cited classification of OGB's that they are subdivided into three categories, six groups (two for each category) and 18 types (three for each group). Moreover, each group is subdivided into two subgroups and each type into three subtypes. Definite thermobaric and other geological conditions for the generation of hydrocarbons, for the forming of deposits thereof, and for the distribution of oil, gas-condensate and gas accumulations by cross-section of the basin are characteristic for each subdivision.

The suggested classification considers all the theoretically possible prerequisites for generating hydrocarbons and for forming deposits thereof. It is convenient for evaluating the prospects that both an OGB as a whole or individual hydrodynamic zones of it bear oil and gas in general or a type of hydrocarbon fluid, and it can be used with manual or machine data processing.

Based upon the classification cited in the article, the description of any OGB can be written in the form of numbers and indices of the subunits singled out. For example, the Dnepr-Donetsk OGB is 1K1G1Sg1T1St (first category, first group, first subgroup, first type and first subtype). From the cited entries, it follows from the indexes and their numeration that in the given oil and gas bearing basin the maximum temperature in the sedimentary cover exceeds 300 degrees C, the cross-section is marked by continuous sedimentary accumulation with the entry of deposits with dispersed OS into the main gas-forming zone in Paleozoic time; the main fluid rests above the rock masses with an increased content of buried OS are evaporite strata; and the sediments with organic residues are in the first and second thermobaric zones, that is, they lie at depths with temperature of less than 110 degrees C and from 110 to 175 degrees C.

With the availability of more detailed information, factual data can be added in parentheses to the numerals and indexes for the subunits, and then, for example, the basin examined above can be briefly described in the following way: Dnepr-Donetsk OGB-1K (520 degrees C; 17 km); 1G (Ap-D), 1Sg (Pz); 1T (P_1; 20-1,800 meters); 1St (C_2; C_1; 0.5-16.3 percent OS; 40-200 degrees C). The maximum temperature in the sedimentary formations and the maximum thickness of the sediments, the age of the basin's constituent rocks, the time of entry of the rocks with dispersed organics into the environment of the main gas-forming zone, the age of the evaporative fluid

rests and their power, the rock masses with increased content of OS, its average amount and the temperature conditions of its deposition are indicated here in parentheses.

With the indicated information, an oilfield geologist can himself get a clear notion about the prospects that a basin as a whole or separate parts of its hydrodynamic zones and stratigraphic complexes are oil and gas bearing and also about the types of hydrocarbon fluids in the deposits.

Moreover, the classification has been made in such a way that the most favorable conditions for forming hydrocarbons and for forming deposits of them have been placed under the first numbers in the subdivisions, so the lower the numerals and the smaller the product of the five numerals that are awarded to the subdivisions in characterizing the OGB, the greater its promise. It is not difficult to compute that the indicated value can range from 1 to 108.

The suggested classification of OGB's considers, except for OS quality and collector characteristics, all the basic factors that influence the generation of hydrocarbons and the forming of deposits thereof. Therefore, with perfecting, it can undergo only insignificant transformation. In this case, it should be noted that humic and sapropelic OS generates hydrocarbons only under different thermobaric conditions, and oil and gas collectors are rocks of different lithological composition (sands, aleurites, limestones, dolomites and argillites). A consideration of OS quality and of collector types would lead to a significant increase in the number of subdivisions in the classification of OGB's and it could thereby prove to be inconvenient for practical use.

A weak continuity of its tie with classifications known up until now is one of the deficiencies of the classification. Therefore, the OGB classification cited in the article does not replace classifications developed on the basis of geomorphological or tectonic attributes, but it supplements them, and, since it is based upon completely different data, it will enable them to be broken down by degree of intensity of hydrocarbon generation and by the conditions under which the deposits were formed.

ummary [printed in English in the original text as follows]

Coming from the study of the effect of temperature conditions, geological history, character of fluid rests over rock masses with a higher content of organic substances and their distribution in thermobaric zones on scales of hydrocarbon generation and formation of deposits, a classification is developed for oil and gas bearing basins in which 3 categories, 6 groups and 18 types are distinguished. Besides, two subgroups are distinguished in each group, and three subtypes--in types. The suggested classification is suitable when estimating the oil and gas content in oil and gas bearing basins.

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OIL AND GAS

CONSTRUCTION OF KARADAG'S OFFSHORE-PLATFORM PLANT LAGS

Moscow STROITEL'NAYA GAZETA in Russian 17 Oct 82 p 3

[Article by A. Krichevskiy (Karadag, Azerbaijan SSR): "On Land and on Sea"]

> [Text] The Main Directions for the Economic and Social Development of our country call for the erection in Azerbaijan of a plant for making deepwater platforms. During his recent visit to Baku, CPSU Central Committee General Secretary, Chairman of the USSR Supreme Soviet Presidium Comrade L. I. Brezhnev said in a conversation with republic managers that the production of new technical facilities for recovering oil and gas in the Caspian Sea must be speeded up in every possible way.

Some 30 kilometers from the republic's capital, on the Karadag shore of the Caspian, our country's first plant for making mighty steel installations for drilling for oil and gas in deep parts of the sea is being raised up. The outlines of the enterprise's main building are visible several kilometers from the site. Painted a soft blue color, it reminds one of an ocean giant that has stepped from the waves to the land's edge. The building's area is really great--90,000 square meters. The plant occupies more than 200 hectares of land here. The enterprise's budget-estimated cost is 335 million rubles.

Just what is a deepwater platform? A stationary platform like a gigantic mushroom, with a base and a cap. In technical language, it is a monoblock and a deck. The foundation--a monoblock about 100 meters high--will be created at the plant in Karadag. Then it will be sent to Astrakhen for completion of the above-water portion--the working platform. In addition to the derrick, which is intended for drilling several slant directional wells, production and hotel-type living quarters for the drillers and servicing personnel will be located on the deck. There will be a helicopter pad, a dining room, a bathhouse, and a cinema here. Almost 250 people will work and live on each such platform. And only after completion of the above-deck portion will the floating island set out for the prescribed site. It will be brought on a Samosval-type barge to the operating site, where, under the force of the structure's gravity, the island's "feet" will go deep into the earth. There they will be fixed very firmly: piles will be driven and they will be concreted.

It is difficult to overestimate the importance of this plant for the development of the domestic oil and gas industry. The assault on offshore oil and gas deposits that lie at a depth of 200 meters, in the depths of the sea bottom, will be

conducted from Karadag's artificial islands, which will form a whole archipelago--from Baku's shores to the shores of Kazakhstan and Turkmenia.

It is planned to turn over the enterprise's first phase--30,000 tons of metal structure, half of the planned capacity--for operation next year. For this purpose work on such most important facilities as the block for auxiliary departments, the main stepdown substation, the boilerhouse and heating lines, and the purification structure must be completed right now.

The work pace is rising. But the contractors (except for Azerbaidzhantransstroy [Azerbaijan Transportation Construction Trust], which is erecting the plant's port, with its levees, moles and docking structures) have not once in 3 years coped with the prescribed construction-work plan. And, according to the results for the first three quarters of 1982, plan fulfillment was only 84 percent.

"There are many causes for this," explains V. Samerchiyan, chief of the production-equipment section of general contracting Trust No 7 of the republic's Minpromstroy [Ministry of Industrial Construction]. "We have been working here 3 years, and only recently has the general designer--TsNIIproyektirovaniyastal'nykh konstruktsii [Central Scientific-Research Institute for the Design of Metal Constructional Structure]--sent us a plan for organizing construction, and even that has a large number of errors."

The site is provided poorly with articles by Minpromstroy's Zhelezobeton [Reinforced-Concrete Trust]--about 60 percent of the required amount. Matters are going no better with premixed concrete. Interruptions often occur in cement deliveries, although the Karadag Cement Plant is 3 kilometers from the site.

In order to build up the construction-work pace, Minpromstroy's management has required the managers of Trusts Nos 1, 2, 4 and 8 to establish subunits of theirs here. This instruction has been carried out only formalistically: only low-capability elements of one or two brigades have been established. Two-shift work has not been arranged.

Perhaps for the first time in the republic, a facility is being erected on which four high-capacity general contracting organizations are employed at the same time, and, in addition to the above-mentioned Azerbaydzhantransstroy Trust and the republic's Minpromstroy, subunits of USSR Minenergo [Ministry of Power and Electrification] and Glavbakstroy [Main Administration for Construction Work in Baku], which are erecting housing for the plant's workers in Primorsk settlement, also are operating here. Under these circumstances the main responsibility for coordinating the work lies with the board of the enterprise that is under construction (the director is T. Mamedov). But the jobs are scattered, and there are about 73 of them. The client simply does not have enough people for the many problems. Even elementary radio and telephone communications do not exist at the gigantic site.

The words of Leonid Il'ich Brezhnev, who appealed to the plant's builders, stimulated an uplift of labor enthusiasm. The September plan was overfulfilled at the industrial facilities, and in October the work will be done at a stepped-up pace.

The boards of all the general contractors held a joint meeting recently. It was resolved to turn over 10 facilities, to eliminate the lag and to do 2 million rubles' worth of work above the plan by the end of the year. This will enable the first complex that is due for early startup to be put into operation ahead of time next year.

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IMPROVEMENTS IN MACHINEBUILDING SUPPORT FOR OFFSHORE OIL INDUSTRY URGED

Baku VYSHKA in Russian 4 Jan 83 p 2

[Article by N. Kurbanov, deputy director of AzINMash [Azerbaijan Scientific-Research Institute for Petroleum Machinebuilding]: "In Order to Help the Offshore Oilfield Workers"]

[Text] At the October 1982 Communist Party of Azerbaijan Central Committee Plenum a number of remarks were made about the republic's oilfield workers. In particular, it was noted that the trend toward a reduction in oil recovery and stagnation in its development that had been planned in recent years had resulted from an inadequate pace in reequipping the industry.

This applies also to us, the machinebuilders--including those of AzINMash, who take part in making equipment for recovering oil and gas. CPSU Central Committee of the Communist Party of the Soviet Union General Secretary Comrade Yu. V. Andropov noted correctly in his speech at the November CPSU Central Committee Plenum: "We have great reserves in the national economy at our disposal....These reserves must be sought out in order to accelerate scientific and technical progress and to introduce scientific and technical achievements and advanced experience into production widely and rapidly."

AzINMash design developers, jointly with oil machinebuilding plants, have created many new types of highly effective oil and gas field equipment in recent years. But today we are talking about what still remains to be done. We are still in great arrears to the offshore oilfield workers. Until now, the equipping of repair departments with special lifting equipment and reliable small-size tools for making round trips in deep wells and with devices for mechanizing the screwing together and the unscrewing of pipes and rods has been inadequate. For a long time the production of lighter-weight two-link elevators with load-lifting capacity of 80 tons that have successfully passed industrial tests and are intended for 73-114 mm pipe was not mastered. Series production of the elevatorshas started at the Ishimbay plant. Of the 20 items planned for production last year, 10 of them were produced and 6 of them are in operation at the republic's facilities.

Work has already started on the creation of a complex of lifting equipment with a load-lifting capacity of 125 tons (in a frame-and-module version) for repairing deep offshore wells--both solitary wells and cluster wells. The complex will be equipped with modern mechanized means for round-trip operations, with lifting and pumping modules, a blowout preventer, and so on. The Sumy Production Association imeni M. Frunze has been drawn into fabrication of the complex.

Certain types of equipment are not being produced at the proper level because of a lack of the required outfitting articles that are delivered by cooperating branches

of industry. For example, we still do not have domestically produced instrumentation for showing the tension on wires and cable for installations that perform well operations. Not enough special packing seals and packing lubricant for gusher fixtures, and so on, are arriving.

There are still some important deficiencies in the institute's and the plants' work to create and introduce new technology. The plan for new equipment is not always taken as the law for us. For various reasons, changes are often made in the plan during the year that set back deadlines for mastering new types of equipment needed by the oilfield workers.

The manufacturability analysis of new equipment is inadequate, which definitely lengthens the period for organizing serial output of it. We are often witnesses to integrated solutions not being realized.

Little attention is being paid, when developing individual types of equipment, to questions of mechanizing various labor-intensive operating processes, including equipment for one of the most labor-intensive processes in recovery--well repair.

During the five-year plan, the institute and the plants face exceptionally heavy and important tasks in creating new types of oilfield equipment and in raising further its technical level and quality. We are participating jointly with the manufacturing plants in the solution of the most important scientific and technical problems.

Including those of creating equipment for drilling holes with speeds that surpass 2-fold to 3-fold those now achieved, increasing withdrawal from the formations, intensifying the development of fields, and prospecting and exploring for deep-lying fields of oil and gas.

Work is already being done to create basically new types of equipment that will be used to outfit various floating facilities and stationary platforms that are intended for drilling holes and recovering oil and gas from the Caspian Sea's continental shelf.

A number of measures on organizational procedure should help us and the industry's plants to fulfill successfully the tasks we face. I shall name them. The design-developers' services at plants should be reinforced. Blueprints must be developed at the plant with participation of the institute's specialists. Of the republic's plants that build machinery for oilfields, only the Plant imeni Leyt. Schmidt is doing this right now. But indeed such a breakdown will enable the producibility of new equipment to be raised. Plant personnel will familiarize themselves with it while it is being developed and this, in turn, will provide for high quality and the most rapid transfer of equipment to oilfield workers for assimilation. The institute's specialists will then be able to direct all their efforts toward creating promising equipment.

The importance and role of designers' surveillance for a machine must be raised, beginning with mastery of its production at the plant and ending with its introduction at the oilfield. It is necessary to strengthen existing experimental department's, to create new ones and to establish a test-stand activity at plants. This will enable the first industrial models of new equipment to be manufactured more rapidly and with better quality without detriment to basic production, and, in the final analysis, the equipment that has been created to be assimilated better and more rapidly.

Simultaneously, equipping AzINMash still more with modern test stands and expanding its experimental production are extremely necessary for speeding up the development of promising equipment and for checking experimental and test models.

Attributing paramount importance to providing customers with highly effective oilfield equipment that is on a par with modern demands, and acting under the guidance of 26th CPSU Congress and 30th Communist Party of Azerbaijan Congress decisions and of tasks set by the November CPSU Central Committee Plenum, the institute's collective and its party organization are filled with resolve to promote work still more widely to create new forms of highly effective equipment for oil and gas field facilities and to provide them to the country's and the republic's oilfield workers.

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AZERBAIJAN OFFSHORE GAS FIELDS SAID TO BE DOING WELL

Baku VYSHKA in Russian 29 Dec 82 p 2

[Article by Azerbaijan Information Agency: "The Caspian's Gas Wealth"]

[Text] The republic's offshore gas-field workers are celebrating the outgoing year with record indicators for natural-gas recovery. Since the start of the year they have recovered 14 billion cubic meters of the blue fuel. This is the largest amount in the whole history of the Caspian shelf's development.

Having obtained a billion cubic meters more of gas during the year that is ending than was called for by the plan, Azerbaijan's offshore gas-field workers overfulfilled their socialist commitments.

The sea does not give up the riches of its depths to people easily. As depths increase, difficulties grow in a geometric progression. Like on a volcano, the recoverers of fuel at the multiple-formation Bakhar field have to work at times where the sea now and then is brought to a boil with gas "geysers" that erupt from below the water. The combined force of the gushers, which is called an overflow of the earth's energy, and wind and wave put one obstacle after another in front of the explorers for fuel. However, people have learned to tame the elements. This year the Bakhar field made a great contribution to the republic's gas fund. Wells Nos 121 and 139, which were drilled here, gave 500,000 and 350,000 cubic meters of gas per day, respectively. A new pipeline is being laid from the Bakhar to the continent. Unlike its operating colleagues', its gas will be brought not to Peschanyy Island, the usual destination, but will go to the Karadag region, closer to the gas treatment plant and to the main customer for the product that is recovered in the field's depths.

The explorers of the depths of the Bulla-Offshore waters achieved a major success during the year that is ending. The brigade of Tair Bagirov and Eduard Aslanov, who drilled a well 6,196 meters deep, opened up an eighth horizon of the field for the first time. A gusher with a daily flow rate of 800,000 cubic meters of gas and hundreds of tons of oil and gas condensate has testified that there is more of the blue fuel in the underwater storehouses than had previously been considered. Right now the explorers of the underground have aimed another group of well bores at the eighth horizon.

The Caspian's gas fields will yield about 200 million more cubic meters of gas by the end of the year.

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TURKMENIA'S BEURDESHIK GAS FIELD TO OFFSET DWINDLING OF SHATLYK'S OUTPUT

Baku VYSHKA in Russian 10 Nov 82 p 3

[Article by S. Gochiyayev (Ashkhabad): "The Gas Field Workers Assault the Depths"]

[Text] The screen of the display glares dully on the work table of V. Talday, chief of Turkmengazprom [Turkmen SSR Gas Industry Association]. While holding the conversation, Viktor Andreyevich pointlessly rummages in a writing pad and leafs through bulgy file folders of reports--the required table is instantaneously extracted from the electronic machine's memory with a simple press of a key. A typical sign of the contemporary way of scientific and technical life.

"Without electronics, the gas industry is simply impossible in our day," says V. Talday. "Automation and remote control are among the main directions for developing the industry during the 11th Five-Year Plan. With completion of the automation of the Beurdeshik gas field, we have basically converted to centralized monitoring over the gas's pressure and temperature at all sections. Right now the association is working on two information-and-computing centers. More than 100 technological, economic and other tasks are being solved with computer assistance. The day is not far off when a single automated control system will be created."

A column of figures with a long string of zeroes--the sums were mainly carried out to the ninth significant figure--lit up the green screen.

"Such are the dynamics of our growing production," commented the association chief. "Since the start of the year Turkmengazprom has turned over 300 million cubic meters of gas above the plan. The labor spirit is high at the gas fields, the competition in honor of the 60th anniversary of the USSR is gathering strength, and we have all the grounds for confirming that by that great date the above-plan account of Turkmen gas-field workers will reach 650 million cubic meters.

"We are combining the policy of intensifying recovery and of prolonging the maximum level of withdrawal of raw material at the deposits that are being worked with the energetic conquest of new fields, particularly the field of the highest capacity in Central Asia--the Dauletabadskoye. It is planned to bring the share of the new gas-recovery complex up to 22 billion cubic meters by the end of the five-year plan. Its role is all the more important because the new field's reserves should gradually and increasingly be actively making up for the natural diminution of blue fuel at Shatlyk, where half of Turkmenia's gas is now being recovered."

The explorers of the underground have spent 5 years on the riches of the Bauletabad-skoye "storehouse," and their labors have been crowned with success: the gas reserves at this field exceed severalfold those that the well-worked Shatlyk has at its disposal. At Bauletabad the construction of six operational wells has now been completed, and the drilling of another eight is proceeding. The brigade of experienced foreman A. Magomedov has worked especially successfully. It has completed drilling a bore with a the record speed for this area of 753 meters per rig per month.

Drilling is being done under complicated geological conditions--crumbling rocks and thick salt-bearing sediments predominate in the logs. Even "upstairs" no few difficulties lie in wait for the oilfield workers. A desert is a desert, and this means scorching sands, frequent black storms and an absence of roads. But Turkmen gas-recovery workers counteract the elements with skills, endurance and a high feeling of responsibility for the job assigned.

The riches of Turkmeniya's earth are the property of the whole multinational Soviet people, and practically the whole country is helping us to master them. And we are confident that the important goal specified in 26th CPSU Congress decisions--to achieve the recovery of up to 81-83 billion cubic meters of gas in the republic by the end of the five-year plan--will be taken.

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COAL

UDC 553.96(571.5)

NEW GLYADEN'SKO-SEREZHSKIY COAL REGION

Moscow RAZVEDKA I OKHRANA NEDR in Russian No 9, Sep 82 pp 10-14

[Article by K. V. Gavrilin and N. I. Kholodov, "Krasnoyarskgeologiya" Production Association]

[Text] The "Principal Directions in the Economic and Social Development of the USSR for 1981-1985 and for the Period Up to 1990" provide for an acceleration of construction of facilities in the Kansk-Achinsk transportation and industrial complex and an increase in coal production by the most efficient stripping method. In this connection the opening of a new coal region is assuming particular importance.*

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The intensive development of the Kansk-Achinsk Basin, provided for in the resolutions of the 26th CPSU Congress, has revealed the need for a marked increase in the geological study of this region. In combination with other work, in the Tenth Five-Year Plan specialists initiated an exploratory evaluation of areas of development of thick coal strata suitable for working by the stripping method. The new Glyaden'sko-Serezhskiy coal region was defined during geological investigations carried out in 1977 by the "Krasnoyarskgeologiya" Production Association. This region is situated in the central, most developed part of the basin, 50-70 km to the south of Achinsk. It is a Mesozoic downwarp extending in a latitudinal direction with an area of about 1,500 km^2, filled with formations of the Jurassic coal-bearing formation. Earlier the coal exploration work in this territory had been carried out only within the limits of the Glyaden'skoye deposit where there are Lower Jurassic deposits not containing thick coal strata (Fig. 1). Materials from a geological survey at 1:200,000 did not contain information on the above-lying more productive horizons of the Jurassic, which held back a detailed geological study of the region. The first exploratory boreholes on the interfluve of the Chulym and Serezh were drilled in 1974 by the "Sovuzuglegeologiya" Association of the USSR Ministry of the Coal Industry after penetration of a thick (27 m) coal stratum during drilling in water. In the course of the investigations it was established that there is a widespread occurrence of Middle Jurassic deposits and thick coal strata associated with them. However, the extent and coal reserves of the new structure remained unclarified. Further geological exploration work was continued by the "Krasnoyarskgeologiya" Production Association. During 1976-1978

* The Kansk-Achinsk transportation and industrial complex is also known as the Kansk-Achinsk fuel and energy complex (KATEK).

the Chulymskaya geological region was outlined and a study was made of a new coal-bearing region containing considerable coal reserves.

The Mesozoic Glyaden'sko-Serezhskiy downwarp is situated between the Arginskiy horst-anticlinorium, the Antropovskiy arch and the Solgonskiy ridge. The downwarp is not closed in a latitudinal direction and is connected with the Berezovskaya and Kozul'skaya depressions. The total extent of the downwarp is 90 km; the greatest width at the bottom of the Jurassic deposits is 23 km. The downwarp is divided into two troughs -- Glyaden'skaya and Serezhskaya -- by a projection of the Solgonskiy ridge. The Glyaden'skaya trough has a rounded configuration with a diameter of about 20 km and is filled with sediments primarily of the Lower Jurassic. The maximum depth of plunging of the Paleozoic basement at the center of the trough is 330 m. The dips of the coal strata on the southern side of the trough are 3-4°, on the steeper northern side -- up to 10°. Horizontally the Serezhskaya trough is an elliptical structure measuring 40 x 20 km, elongated in a latitudinal direction (Fig. 2). The depth of plunging of the basement is, hypothetically, as great as 900 m. The sides dip gently at angles 3-8°. Locally, near basement projections, the dips of the strata attain 40°.

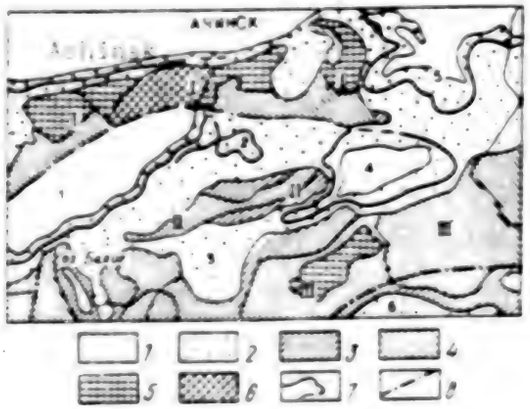

Fig. 1. Schematic geological map of western part of Kansk-Achinsk brown coal basin. Deposits: 1) undivided Late Jurassic and Cretaceous; 2) Jurassic coal-bearing formation; 3) Carboniferous; 4) Devonian; 5) Cambrian; 6) intrusive formations; 7) outcrops of thick coal strata; 8) dislocations; positive structures: I) Arginskiy horst; II) Antropovskiy arch; III) Solgonskiy ridge; negative Mesozoic structures: 1) Berezovskaya, 2) Nazarovskaya, 3) Glyaden'skaya, 4) Serezhskaya, 5) Kozul'skaya, 6) Balakhtinskaya

The narrow Serezhskaya syncline extends between the Serezhskaya and Glyadyn'skaya troughs; it complicates these two structures. It has a width of 4-5 km and extends for 30 km. The greatest depth of the downwarp along the axis of the fold is 480 m. The northern side of the structure is steeper (45°), the southern side is gentle (2-3°). In the troughs of the coal-bearing stratum use was made of the stratigraphic [illegible] in the western part of the

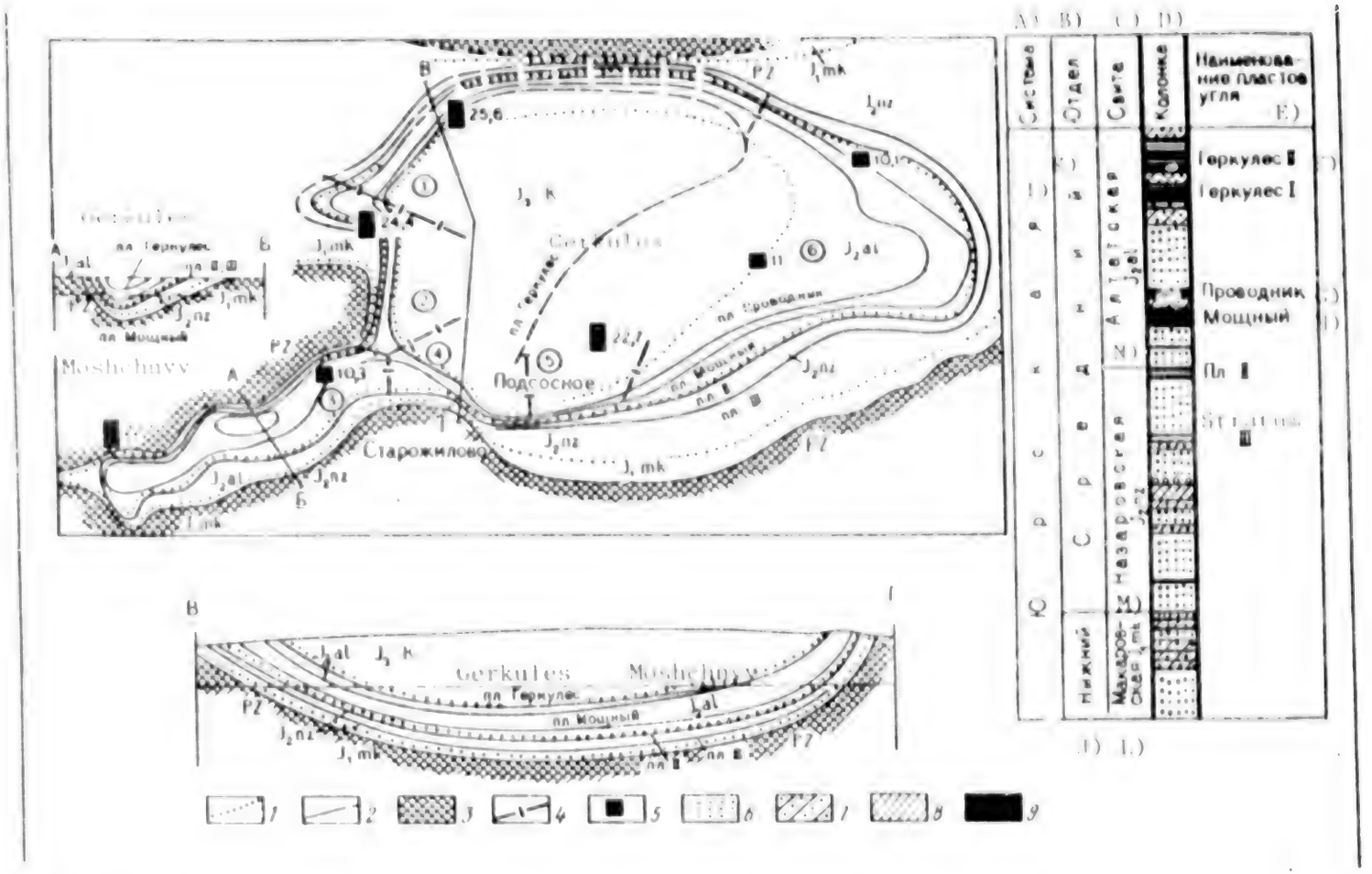

Fig. 7. Serozhskove brown coal deposit. 1) boundaries of suites; 2) outcrops of thick coal strata; 3) underlying pre-Jurassic deposits; 4) boundaries of explored sectors; 5) column of Moshchnyy coal stratum with indication of thickness; 6) sandstones; 7) siltstones; 8) argillites; 9) coals, explored sectors: I) Severo-Vostochnyy, 2) Zapadnyy, 3) Serozhskiy, 4) Starozhilovskiy; 5) Podsosenskiy; 6) Nikolayevskiy.

KEY TO FIGURE 2

A) System
B) Formation
C) Suite
D) Column
E) Designation of coal strata
F) Gerkules
G) Provodnik
H) Moshchnyy
I) Jurassic
J) Lower
K) Middle
L) Makarovskaya
M) Nazarovskaya
N) Altatskaya

Kansk-Achinsk Basin*. In the Jurassic coal-bearing formation it is possible to discriminate major sedimentation cycles comparable with similar cycles in adjacent structures (Berezovskaya, Kozul'skaya), which makes possible the successful correlation of individual intervals in the sections. The structure of the lower part of the section (Makarovskaya suite of Early Jurassic age) makes it possible to discriminate two mesocycles. Both begin with the accumulation of relatively coarse-grained material and end with the formation of numerous thin coal layers. In the Glyaden'skaya trough the formation of a complex coal stratum is associated with the end of the mesocycle. The total thickness of the Makarovskaya suite is 120-140 m. Above this there are rocks of the Nazarovskaya (Kamalinskaya) suite of Middle Jurassic age.

The nature of the rocks indicates the existence of two sedimentation cycles. The first of these began with the accumulation of greenish sandstones. Then sandstones and siltstones of various grain sizes were deposited; all these contain one thin coal stratum. The second mesocycle, during which a stratum of rocks of different granulometric composition was formed, is broken down into two elementary cycles. Each of these ends with the accumulation of a relatively thick coal stratum. The thickness of the formations of the Nazarovskaya suite is 200-290 m. The section of the coal-bearing stratum is crowned by deposits of the Altatskaya (Borodinskaya) suite of the Middle Jurassic, formed in the course of two mesocycles. The lower part of the suite has a characteristic simple structure. The basement consists of sandstones with a thickness up to 20-40 m. Above this there is a relatively thin packet of intercalated siltstones and argillites (10-15 m), completed by a thick, sustained coal stratum (first sedimentation mesocycle). The upper part of the suite is characterized by a frequent change of types of rocks and is crowned by a thick coal stratum of very complex structure (second mesocycle). The second mesocycle consists of an inconstant number of elementary cycles, which explains the mottled composition of the suite. On the northern side of Serezhskaya trough this stratum is divided into two parts, separated by 60 m. The total thickness of the suite deposits attains 300 m.

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* Gavrilin, K. V., Zhichko, L. A. and Zubareva, R. A., "Principal Patterns of Distribution of Coal Strata in Kansk-Achinsk Basin," SOVETSKAYA GEOLOGIYA (Soviet Geology), No 8, pp 3-12, 1981.

In the central part of the trough variegated Upper Jurassic deposits cover the coal-bearing formation without apparent nonconformity, whereas in the eastern part they lie with a stratigraphic nonconformity on deposits of the first cycle of sedimentation of the Altatskaya suite. As in other regions, the Upper Jurassic deposits are represented by sandstones, siltstones and argillites with intercalations of limestones. Rocks of the lower intervals in the section have a bluish-greenish tone; in the upper part they are variegated -- violet, waxy red and spotty. The total thickness of the Upper Jurassic sediments is 210-230 m. The central zone of the depression is filled with yellowish-white and cream-colored sugarlike sandstones of the Ilekskaya suite of the Lower Cretaceous. Their thickness exceeds 200 m.

The intensity of coal accumulation in the different suites is not the same. The lower Makarovskiy horizon is most representative in the Glyaden'skoye deposit. Here in the interval of the section 40-50 m there is a concentration of up to 12 coal strata with a total thickness up to 18-19 m, of which 2 attain thicknesses of 6 m. However, the thickness of the coal strata is not constant. In the Serezhskaya structure the number of coal strata of this horizon and their thickness are sharply reduced. In the western part of the trough the full thickness of all the strata rarely exceeds 6 m; in the east it scarcely attains 3-4 m. The coal accumulation horizons of the Nazarovskaya and Altatskaya suites each contain two main strata. Three of them probably extend over the entire territory of the Serezhskaya and Sereul'skaya structures and are traced along their peripheries. The upper stratum was preserved from erosion in the hinge of the Sereul'skaya fold and in the western part of the Serezhskaya fold. The total thickness of all the strata and intercalations of the Nazarovskaya and Altatskaya suites attains a maximum in the western side of the Serezhskaya trough.

The lower stratum III of the Nazarovskaya suite with a thickness 5-6 m has a simple structure. It has commercial value only in the southern and northwestern parts of the structure. In the remaining sectors the thickness does not exceed 2-4 m, whereas in the Sereul'skaya structure the stratum merges with the above-lying stratum II with a thickness of 1-21 m. The upper stratum II of the Nazarovskaya suite lies 30 m upward in the section; its structure is complex and its maximum thickness (9-10 m) was registered on the southern side of the Serezhskaya structure and 4-6 m on the northern side. The lower stratum of the Altatskaya suite -- the Moshchnyy stratum -- in its stratigraphic position corresponds to a part of the Berezovskiy stratum (Berezovskaya structure), and like it, contains the principal coal reserves. Its structure is primarily simple; the thickness on the southern side of the Serezhskaya rock structure is 14-24 m, on the western side -- 15-28 m, and on the eastern closure -- 9-12 m. In the Sereul'skaya syncline the thickness of the stratum is 11-22 m. In many sectors the stratum can be worked by the stripping method. On the northern side and in individual sectors in the southern part of the Serezhskaya trough, 3-10 m upward in the section from the Moshchnyy stratum, is the Provodnik stratum with a thickness from 5 to 9 m, having commercial value. The upper of the known strata -- the Gerkules stratum -- is characterized by a very complex structure; the total thickness of the 17-25 coal layers of the stratum in the sections of the western side of the trough attains 41-51 m (in the range of thickness 64-72 m). In the northeastern direction the central part of the

stratum is completely replaced by terrigenous formations; only its extreme layers, each with a thickness of 6-8 m, persist. In the eastern half of the Serezhskaya trough the stratum has probably been annihilated by Late Jurassic erosion. The quality of the coals in the new region has been studied quite completely from core samples. The coals of all strata are brown (group B2); they contain much humus and are represented primarily by semidull varieties. The sulfur content is 0.3-0.7%, carbon 70-72%, hydrogen 4.6-5.9%. The heat of combustion of the fuel part of the coal is 27.5-28.5 MJ/kg. The yield of tar in the semicoking process is 4.5-6%; the yield of semicoke is 70-75% (reduced to dry coal). The averaged characteristics of the principal strata and the coal quality indices are given in Table 1.

Table 1

Stratum	Average thickness, m	Coal reserves, billion tons	Coal quality			
			W^P, %	A^S,%	Q^P_n, MJ/kg	Tar yield in semicoking, %
Gerkules	15.5	1.0	31	26	13.0	-
Provodnik	5.4	0.7	32	11	15.2	4.4
Moshchnyy	16.9	4.2	32	11	15.2	5.7
II	6.8	1.3	31	23	13.7	5.4
III	6.1	0.8	32	20	14.2	5.9

Table 2

Sectors	Area, km^2	Number of working strata	Coal reserves, billion tons	Mean stripping coefficient
Yuzhno-Serezhskoye Deposit				
Sereul'skiy	45	3	1.0	6.0
Starozhilovskiy	34	5	0.9	4.5
Podsosenskiy	37	4	1.7	4.0
Nikolayevskiy	50	2	0.9	6.0
Severo-Serezhskoye Deposit				
Zapadnyy	30	5	1.8	4.0
Severo-Zapadnyy	34	4	1.6	4.5

The total coal reserves of the region to a depth of 600 m according to the all-union inventory of 1980 are estimated at 20 billion tons. The reserves suitable for working by stripping to a depth of 300 m were 9.5 billion tons, of which 8 billion tons, with respect to degree of study, correspond to categories C_1, C_2. On the northeastern side of the Serezhskaya structure the predicted reserves are 1.5 billion tons. The cost of exposing 1 ton of categories C_1, C_2 was less than 0.01 kopeck. Computations were made under the following conditions: minimum thickness of stratum 2 m, maximum ash content 30%, limiting linear stripping coefficient 1:10. Over the territory of the region two deposits are

arbitrarily defined -- Severo- and Yuzhno-Serezhskoye, each of which is divided into a number of sectors (Table 2).

The Podsosenskiy, Zapadnyy and Severo-Zapadnyy sectors are of the greatest commercial value. The reserves of the main stratum (Moshchnyy) in these sectors are 950, 650 and 800 million tons respectively. The mean stripping coefficient is less than 4 m^3/ton. With working of all the strata the commercial reserves are more than doubled, but there is also some increase in the stripping coefficient. The geological-mining indices of the new deposits are entirely favorable, but they unquestionably are poorer than for the adjacent deposits of the Kansk-Achinsk Basin, such as the Berezovskoye deposit, where thicker strata have been established. However, the discovery of the new region considerably increased the total potential of the basin. Putting these deposits into operation in the later stages of development of the Kansk-Achinsk transportation and economic complex will make possible a more efficient distribution of coal-producing enterprises. In order to increase the level of the planning work for development of the Kansk-Achinsk transportation and economic complex during the 11th Five-Year Plan it will be necessary to carry out exploration of the most promising areas of the Glyaden'sko-Serezhskiy region.

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PIPELINE CONSTRUCTION

GAS PIPELINE NEARS TASHKENT

Tashkent PRAVDA VOSTOKA in Russian 20 Nov 82 p 2

[Article by A. Skorobogatov, UzTAG correspondent]

[Text] The Syrdar'ya-Tashkent pipeline under construction has proceeded through one of the largest water arteries of the republic--the canal imeni Kirova. The seventh detachment of the "Mostostroy" trust completed the creation of a 44-meter pile transition here. The construction of such transitions is making an open step also on the rivers of Syrdar'ya and Chirchik.

The route of a more than 200-km steel channel from Syrdar'ya GRES to Tashkent passes through long inhabited and thickly settled rayons of the republic. Here gas pipelines have been laid by the workers of "Sredazneftegazstroy" general contracting trust and in the sand dunes of the desert and the ridges of the Tyan-Shan one must encounter special difficulties. This is above all a set of both large and small water barriers--rivers and irrigation channels. Here the help of bridge builders was necessary.

Additional complexity here consisted in the fact that the main line on almost all its course is laid on lands subjected to agricultural rotation. Therefore the mechanizers strive to make trenches with a jeweler's precision. The upper fruitful layer of the soil is carefully removed with the earth and then after the pipes are laid is returned to its place again.

To accelerate work by "Sredazneftegazstroy" two detachments were created, equipped with a powerful excavator and pipe-laying equipment. The work is being done simultaneously from both ends--the detachments are moving toward one another from Tashkent and Syrdar'ya GRES, which the gas came from last year. All the brigades are working with a will, and this helped them considerably exceed the shift tasks. On stations, on special stands, they not only weld but also apply the insulation of pipes, which produces high quality of protection of the main line against corrosion. Over the steel bed goes gas of the Shurtanskoye deposit containing sulfur admixture, and so the pipes are covered inside with a special composition that protects the metal against corrosion.

Now 50 kilometers of new gas pipeline have been laid, and it is planned to lay 30 more before the end of the year. The construction of the main line is planned to be finished completely by the end of next year. Then several billion cubic meters of gas will be fed into the Tashkent industrial rayon from underground warehouses.

of the Karshinskaya steppe. The gas bursts out in the burners of the Tashkent GRES, the roasters of the Akhangaranskiy and Bekabadskiy cement combines. According to calculations of the specialists this will permit annually saving up to a million tons of mazut and releasing many thousands of reservoirs needed for its transportation.

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PIPELINE CONSTRUCTION

PIPE WELDING PROBLEMS REPORTED

Moscow STROITEL'NAYA GAZETA 28 Nov 82 p 3

[Article by A. Podkorytov, senior engineer of Orgneftetruboprovodstroy trust, Surgut, Tyomen Oblast]

[Text] When the builders of the new main gas pipeline in the northern regions of Tyumen Oblast--the European part of the USSR, summed up the results of the first month of the winter season, it turned out that not much had been done. The route workers of the largest subcontractor, the Surguttruboprovodstroy trust, had welded only 5 kilometers of pipes into the network. It was decided to postpone the laying of the northern section of the main line because of an absence of planning documentation. In Surgut and Nefteyugansk they already are calculating the losses from the downtime of line brigades.

And the planners are making it look as theough nothing had occurred.

"We have performed our duties," said the chief work planning engineer, V. Prostyakov. "There are drawings, the oil pipeline can be built, and we will put the parts in good working order.

Wwe will try to put some of the parts in order."

The route of the oil pipeline intersects small water barriers, shallow lakes, brooks and swamps about 400 times. It is proposed to overcome many of them by an underwater method: divers with drills wash out a trench and then drag a syphon weighted with cast-iron rings along its bottom with po erful winches. It remains for the line brigades only to weld the pipe ends to the overland part of the oil pipeline. Why do the builders say that the proposed plan is technically not feasible?

The fact is that the plan does not envisage overweighting loads on the pipeline. On the contrary, it is precisely the pipe buoyancy that is made the basis of the method: the length of pipe floats through the lake, and for submerging the cavity buried on the bottom it is necessary to flood with water. Under winter conditions, however, laying pipe by the method of alloying and free submergence appears rather strange.

The builders also expressed this comment. To be contained in the planned periods of construction the flooded sections must be passed through at a rate ordinary for dry places--a kilometer per day. This is possible where the pipe-laying is done continuously. For the passage of equipment (where required) it is necessary to erect

a dike of local soil. It will serve as a road for route workers, and after completion of construction will remain for the use of operators, so that they may be able to rapidly eliminate defects in the piping in places difficult of access.

But the planners also rejected the dike. Reserve networks of pipelines in zones of increased danger also were not provided for. The rules allow such a thing, but only after careful investigation. Meanwhile, according to the conclusion of an authoritative interdepartmental commission, investigations on the route were conducted by making observations or were not conducted at all.

In the project it is written: "The work is envisaged only in the winter [sic] time." This permitted excluding from consideration all freezing swamps and "saving" on a large scale. At the same time, in the plan are methods of overcoming water barriers intended exclusively for summer.

In order to smooth over contradictions, specialists of the Tomsk branch of Giprotyumenneftegazproyekt added to the working drawings: "To fasten the pipeline in exceptional cases, when it is impossible to fill it with water, anchors are provided." But the pipeline is fastened with anchors when it is already in its planned position, and without water the pipe will float.

In the plan of organization of construction there are no plans for the arrangement of mechanisms during the laying of a pipeline on flooded and swampy sections. For a dry place there is such a plan--accurately redrawn from a reference work.

Further events can be foreseen. Only the planning institute will obtain the money to do the work and will distribute prizes for "economical design," consent will be given for any corrections to the plan. Is it necessary to strengthen the ballasting? Please install additional overloads. The pipe will not go into the trench profile? On the section from the 8th to the 43rd kilometer of the route lakes are "found" which were not shown on the working drawings. Build--examine in the working sequence. Let us find true technical solutions, let us examine the estimate. And all this is called already not planning but agreement.

What sort of conclusions suggest themsleves? Above all the builders of the oil pipeline of the northern region of Tyumen Oblast--the European part of the USSR, which is of great economic importance, must obtain a plan of quality. It is also is thought that it is time to refine the very concept of the final reasult of labor of planners. The main indicators of quality of the plan must become the actual expenditures on the construction of the oil pipeline, and the planners, just as the builders, should have responsibility for the quality of its construction.

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PIPELINE CONSTRUCTION

PIPELINE ASSEMBLY CONVEYER TESTED

Moscow STROITEL'NAYA GAZETA in Russian 28 Nov 82 p 3

[Article by TASS sorrespondent]

[Text] At the Sterlitamak Construction Machinery Plant they have started tests of the new heavy pipelayer "TG-802."

Pipelayer assembly conveyer

In December of this year it is planned to issue the first industrial lot of those machines. They are intended for the builders of the main gas pipeline from Siberia to the western border.

The new pipelayer differs from the model "TG-502" now being issued by the plant in its increased lifting capacity. Experimental machines raise plates weighing 80 tons, which is 30 tons more than the series-produced machines. The "TG-802" are more productive in work, simpler to control and differ in greater stability.

The new units are made in a creative collaboration of the builders of Moscow, Chelyabinsk, Bashkiriya and Chubashiya on the basis of a series-produced tractor of the Cheboksary Industrial Tractor Plant.

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PIPELINE CONSTRUCTION

BRIEFS

FOR RIVERS OF GAS--Specialists of the All-Union Scientific Research Institute of Arc Welding Equipment have successfully solved an important technical problem. For the first time in the country at the Volzhskiy Pipe Plant of Volgograd Oblast they have completed the introduction of a new progressive technology of high-speed arc wekdubg in the manufacture of large-diameter pipes of up to 1420 millimeters. "The essence of this original technology," says the manager of the institute laboratory, Candidate of Technical Sciences A. V. Ivaninov, "consists in this, that welding is now done, not with multi-arc enormous heads, complex to handle, but with more compact ones, in which several welding wires are used simultaneously, acting in the form of an electron beam. The application of a novel method permitted increasing labor productivity and reducing the expenditure of welding materials and electric power by more than 1.5 times and addition, considerably improving the quality of welded joints. The national economic effect from its introduction alone at a single pipe-welding machine was more than 60,000 rubles. [By A. Aplushinskiy] [Text] [Leningrad LENINGRADSKAYA PRAVDA in Russian 6 Jan 83 p 2] 2174

PROGRESS ON GAS PIPELINE--The laying of a 300-meter inverted syphon on the route of the Urengoy-Pomary-Uzhgorod gas pipeline across the river Ilet' in Mari ASSR has been completed by the complex brigade of V. Chernyavskiy from the "Vostokpodvodtruboprovodstroy" trust. The carefully prepared and conducted operation took 3 days instead of a week. Preliminary tests showed that the installation of the underwater transition was performed with good quality. The collective had to transport the network of steel pipes from shore to shore ahead of schedule--at the beginning of March. [Text] [Moscow PRAVDA in Russian 21 Jan 83 p 3] 2174

MORE GAS ARRIVING IN GEORGIA--Natural gas has arrived at the home of the innabitants of the high-mountain village of Ananuri of Dushetskiy Rayon. This year the fuel will also arrive in the villages of Vanskiy, Amanisskiy, Kvarel'skiy and Gurdzhaanskiy and other rayons of Georgia. Before the end of the Five-Year Plan 700 kilometers of gas pipeline will be laid. [TASS] [Text] [Ashkhabad TURKMENSKAYA ISKRA in Russian 14 Jan 83 p 1] 2174

MORE GAS TO KAZAKHSTAN--Natural gas has arrived in the quarters of inhabitants of the village of Dzhangala of Uralsk Oblast. Not far off is the start of operations of the automatic distributing station which obtains natural gas from the main pipeline. A complex program of gasification is being accomplished in the oblast. [Text] [Alma-Ata KAZAKHSTANSKAYA PRAVDA in Russian 24 Oct 82 p 1] 2174

TROUBLE CROSSING SYLVA RIVER--The thrust across the Kama, Volga and Varka which the Urengoy-Pomary-Uzhgorod export gas pipeline intersects had long ago been completed and the workers of the Kazan specialized administration of underwater-techical work No 4 of "Vostokpodvodtruboprovodstroy" Trust already had extended inverted syphons (main and reserve) along the bottom of the Sylva River in Perm Oblast. It is not wide, a little more than 250 meters. However, at times it seems that a winch pulling the first and then the second large-diameter inverted syphons did not stand up to the load, and the cable stretched to the limit until it burst. The difficulty was connected with the fact that in the production of underwater-technical work on the Sylva for the first time heavy reinforced-concrete overloads found application. Having completed a "two-network" transition across the Sylva, the builder-divers developed preparations to attack the river Iren'. [By F. Manasypov, Perm Oblast] [Text] [Moscow SOVETSKAYA ROSSIYA in Russian 4 Jan 83 p 2] 2174

THROUGH THE TAIGA--A 43-kilometer section of the second network of the Krasnoyarsk-Irkutsk oil pipeline has gone into operation. This is the most complex section of the route . The builders have erected transitions on the Moscow tract, the Transsiberian Railroad and the Kitoy River. The brigades of A. Gorshkov and N. Kozyrev and others have capably overcome all the obstacles. By the end of the year it will be necessary to send a by-pass route of the pipeline around Angarsk. [By V. Kur'yaninov, correspondent of VOSTOCHNO-SIBIRSKAYA PRAVDA, Meget, Irkutsk Oblast] [Text] [Moscow PRAVDA in Russian 15 Nov 82 p 2] 2174

MIRNYY RECEIVES GAS--On the map of the USSR Single Gas Supply System, in the Central Dispatcher Administration of the Ministry of Gas Industry has appeared still another object--the Irkutsk city of Mirnyy. Natural gas from the Irelyakhskoye deposit has arrived there. The gas is ready to enter the municipal underground communications. Initially it was proposed to feed to Mirnyy gas from the Sredno-Botuobinskoye gas-condensate deposit. The "Yakutgazstroy" Trust proceeded to construct a 170-kilometer pipeline with a diameter of 530 millimeters. Two moving mechanized columns conduct the route simultaneously from the side of the deposit and from the city of Mirnyy. And there the geologists have presented a surprise: as long as the construction proceeded, they discovered near Mirnyy a new deposit of gas, the Irelyakhskoye. True, the gas reserves in it are relatively small. It is not spacious enough for long industrial operation. Irelyakh will become a temporary source of energy and heat for the city. It has permitted feeding gas into the capital of a diamond-bearing kray a year earlier than planned. For that purpose a small gas pipeline has been constructed, putting it into an already ready sector of the main pipeline going from Mirnyy. [By L. Zorin and A. Trutnev] [Text] [Moscow IZVESTIYA in Russian 30 Jan 83 p 2] 2174

HEAT FROM TAIGA DEPTHS-Laying of natural gas communications has started along the Nizhnevartovsk-Tomsk-Kuzbass main gas pipeline. The first village to which cheap heat of the Siberian depths arrived was Volodino, where a powerful boiler house has been installed. Connected to the main line is a 6-kilometer pipeline, laid through the taiga swamp. To feed the casing-head gas of the oil deposits of Priob'ya not only to industrial centers but also to the depths of the taiga several gas compression stations were started which considerably increased the carrying capacity of the artery. The "Tomsktransgaz" Association helped erect the rural gas networks for the farms. In the present Five-Year Plan it is planned to gasify all the large villages of Tomsk Oblast. [By Tomsk correspondent] [Text] [Moscow SEL'SKAYA ZHIZN' in Russian 2 Dec 82 p 1] 2174

GRANITE KILOMETERS OF TUNDRA--The first kilometers of the trench under the steel network of the northernmost gas pipeline, the Urengoy-Pomary-Uzhgorod, have been prepared today by the builders. Permafrost extends as a complex massif from the 1st to the 60th kilometers of the route. In their strength such soils are like granite. Experience accumulated by the Siberians during the construction of gas pipelines to Chelyabinsk and Novopskov helped. Mini-drill holes are drilled in the permafrost to the depth of the trench. In them a small charge is placed. The dose of explosives does not scatter the ground over the tundra but can only loosen it. Then on the route powerful excavators and bulldozers go out and proceed to lay trenches. This section is the subject of special care also of the operators. Natural gas is allowed to pass along it only when cooled, in order to preserve the permafrost in the frozen state. Therefore at the Urengoy deposit the construction of a gas cooling station has been started. [By TASS correspondent, Novyy Urengoy, Tyumen Oblast] [Text] [Ashkhabad, TURKMENSKAYA ISKRA 9 Feb 83 p 1] 2174

NEW GAS IN AZERBAIJAN--The installation of a new underwater pipeline on the Caspian in Azerbaijan has been completed. Over a steel line connecting the Bulla deposit by sea with the mainland, fuel is fed to the mainland. [Text] [Moscow EKONOMICHESKAYA GAZETA in Russian No 5, Jan 83 p 3] 2174

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April 8, 1983

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